WHAT IS CLAIMED IS:

1. A process for the continuous nickel plating of at least one aluminum conductor with a nickel coat comprising a pre-treatment step P to improve the adherence of a nickel coat and an electrolytic nickel plating step N in which said nickel coat is deposited on said conductor by the action of a nickel plating current $I_n$, wherein said pre-treatment step P is performed electrolytically and makes the contact properties of said conductor sufficient to enable a mechanical electrical contact and wherein the nickel plating current $I_n$ is transmitted to said conductor through a mechanical electrical contact on the part of the conductor output from the pre-treatment step P.

2. The process according to claim 1, wherein the pre-treatment step P comprises an activation A in a strongly acid or alkaline bath to enable fast dissolution of surface oxides.

3. The process according to claim 1, wherein the pre-treatment step P comprises a pre-nickel plating step PN to coat the aluminum conductor with a primary nickel deposit.

4. The process according to claim 3, wherein the equivalent average thickness of the said primary nickel deposit is less than about 0.1 µm.

5. The process according to claim 1, wherein the pre-treatment step P comprises an activation A in a strongly acid or alkaline bath to enable fast dissolution of surface oxides and a pre-nickel plating step PN in a pre-nickel plating bath that coats the aluminum conductor with a primary nickel deposit, and wherein the pre-nickel plating step PN and the activation step A are done jointly and electrolytically with a liquid current connection.

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6. The process according to claim 5, wherein the compositions of the activation bath and the pre-nickel plating bath are substantially the same.

7. The process according to claim 5, wherein the equivalent average thickness of said primary nickel deposit is less than about 0.1 µm.

8. The process according to claim 1, wherein the pre-treatment step P comprises an activation A in a strongly acid or alkaline bath to enable fast dissolution of surface oxides and a pre-nickel plating step PN in which the aluminum conductor is coated with a primary nickel deposit, and wherein the pre-nickel plating step PN and the activation step A are done simultaneously in the same bath.

9. The process according to claim 8, wherein the equivalent average thickness of said primary nickel deposit is less than about 0.1 µm.

10. The process according to claim 1, wherein the mechanical contact is immersed in a liquid, possibly cooled, such as water or a neutral solution.

11. The process according to claim 1, wherein said mechanical contact comprises at least one mechanical rolling contact means.

12. The process according to claim 1, wherein several conductors are treated simultaneously.

13. The process according to claim 1, wherein the aluminum conductor is made of an alloy selected from the group consisting of AA 1370, AA 1110 and AA 6101 according to the nomenclature of the Aluminum Association.

14. A process for manufacturing an aluminum electrical cable comprising:

- providing an elementary wire or strand;

- nickel plating said wire or strand using the process according to claim 1;

- making said cable using at least one nickel plated elementary wire or strand.

15. A device for the continuous nickel plating of at least one aluminum conductor with a nickel coat, said device comprising :

- a nickel plating tank comprising a receptacle that can contain a nickel plating bath and at least one electrode called the anode, containing nickel;

- at least one electrical power supply to apply an electrical voltage $V_1$ between the electrode, or each electrode, and said conductor;

- means of moving the conductor in the nickel plating bath;

wherein said device further comprises:

- at least one electrolytic pre-treatment tank comprising a receptacle that may contain a pre-treatment bath;

- means of moving the conductor, or each conductor, in the pre-treatment bath; and

- mechanical contact means for applying said voltage on the part of the conductor, or each conductor, output from the pre-treatment step P.

16. The device according to claim 15, wherein the at least one pre-treatment tank is provided with at least one electrode and wherein the device comprises at least one electrical power supply for the pre-treatment P.

17. The device according to claim 16, wherein the voltage of the electrical power supplies for the nickel plating and the



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pre-treatment is applied to the conductor through the same mechanical contact means.

18. The device according to claim 15, wherein the mechanical contact means comprises a tank that may contain a liquid in which the mechanical contact is immersed.

19. The device according to claim 15, further comprising:

- an activation tank comprising a receptacle that may contain an activation bath and at least one electrode;

- a pre-nickel plating tank comprising a receptacle that may contain a pre-nickel plating bath and at least one electrode; and

- at least one common electrical power supply for activation A and pre-nickel plating PN.

20. The device according to claim 19, wherein the electrical power supply of the activation tank and the pre-nickel plating tank is configured as a liquid current connection through the conductor.

21. The device according to claim 15, further comprising means for nickel plating several conductors simultaneously.

22. The device according to claim 15, further comprising means for advancing two or more conductors simultaneously in at least one of the said treatment tanks.

23. The device according to claim 15, wherein said mechanical contact means comprises at least one mechanical rolling contact means.

24. The device according to claim 23, wherein the at least one mechanical rolling contact means comprises at least one wheel rotating about an axle having a central axis approximately perpendicular to said at least one wheel.

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25. The device according to claim 24, wherein the at least one wheel comprises a ring to facilitate rotation of the at least one wheel and to improve the electrical contact.

26. The device according to claim 25, wherein said ring is made of graphite.

27. The device according to claim 15, wherein at least one of the said mechanical contact means comprises a set of at least three wheels that work together to make an electrical contact on the conductor.

28. The device according to claim 27, wherein at least one of the wheels is grooved.

29. The process according to claim 1, wherein said aluminum conductor is an aluminum strip or aluminum tube.

30. The process according to claim 1, wherein said aluminum conductor is a composite aluminum product comprising a base part and at least one clad alloy layer.

31. The process according to claim 30, wherein the clad alloy layer comprises a wetting agent.

32. The process according to claim 31, wherein the wetting agent is selected from the group consisting of lead, bismuth, lithium, antimony, tin, silver, thallium and any mixture thereof.

33. The process according to claim 31, wherein the clad alloy layer comprises between 0.01 and 1 wt. % of wetting agent.

34. The process according to claim 30, wherein the clad alloy layer comprises an aluminum-silicon alloy.

35. The process according to claim 1, wherein the nickel plating step is performed using a nickel plating bath containing a compound of a wetting agent, so as to deposit a nickel coat containing a wetting agent onto the aluminum conductor.



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36. The process according to claim 35, wherein the compound is selected from the group consisting of the acetates, citrates, sulfamates, fluoborates, lactates, oxides and mixtures thereof.

37. The process according to claim 36, wherein said aluminum conductor is a composite aluminum product comprising a base part and at least one clad alloy layer.

38. The process according to claim 37, wherein the clad alloy layer comprises an aluminum-silicon alloy.

39. The process according to claim 37, wherein the clad alloy layer comprises a wetting agent.

40. The process according to claim 39, wherein the wetting agent is selected from the group consisting of lead, bismuth, lithium, antimony, tin, silver, thallium and any mixture thereof.

41. The process according to claim 39, wherein the clad alloy layer comprises between 0.01 and 1 wt. % of wetting agent.

42. A process for manufacturing an assembled product comprising the steps of:

- providing a composite aluminum product comprising a base part and at least one clad alloy layer; and

- nickel plating said composite product according to the process of claim 1.

43. The manufacturing process according to claim 42, wherein the clad alloy layer comprises a wetting agent.

44. The manufacturing process according to claim 43, wherein the wetting agent is selected from the group consisting of lead, bismuth, lithium, antimony, tin, silver, thallium and mixtures thereof.



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45. The manufacturing process according to claim 43, wherein the clad alloy layer comprises between 0.01 and 1 wt. % of wetting agent.

46. The manufacturing process according to claim 42, wherein the clad alloy layer comprises an aluminum-silicon alloy.

47. The manufacturing process according to claim 42, wherein said composite product is in the form of a strip or a tube.

48. The manufacturing process according to claim 42, wherein the nickel plating is performed using a nickel plating bath containing a compound of a wetting agent, so as to deposit a nickel coat containing a wetting agent onto the aluminum conductor.

49. The manufacturing process according to claim 48, wherein the compound is selected from the group consisting of the acetates, citrates, sulfamates, fluoborates, lactates, oxides and mixtures thereof.

50. The manufacturing process according to claim 48, wherein the clad alloy layer comprises a wetting agent.

51. The manufacturing process according to claim 50, wherein the wetting agent is selected from the group consisting of lead, bismuth, lithium, antimony, tin, silver, thallium and any mixture thereof.

52. The manufacturing process according to claim 50, wherein the clad alloy layer comprises between 0.01 and 1 wt. % of wetting agent.

53. The manufacturing process according to claim 42, wherein the assembled product is a heat exchanger.

54. The manufacturing process according to claim 42, further comprising brazing said composite product.

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